



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/798,350 | 03/12/2004 | Federico Innerebner | 004640-046 | 5618 |

21839 7590 09/14/2006

BUCHANAN, INGERSOLL & ROONEY PC
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

| |
|----------|
| EXAMINER |
|----------|

LAMBELET, LAWRENCE EMILE

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

1732

DATE MAILED: 09/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/798,350

Applicant(s)

INNEREBNER ET AL.

Examiner

Lawrence Lambelet

Art Unit

1732

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2006.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
4a) Of the above claim(s) 35-39 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-34 and 40-42 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☒ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group I invention, claims 1-34 and 40-42, in the reply filed on 8/1/2006 is acknowledged. The traversal is on the ground(s) that examination of the entire application as submitted is without burden on the Office. This is not found persuasive because Group I is classified under class 264, Group II, under class 425, and Group III, under class 428. The showing of burden resides in the requirement for different fields of search necessitated by separate classifications.

Applicant further elects species (2), as required, and identifies claims 1,3-4, 6-19 and 22-42 as readable on the elected species. In this case, applicant's traversal on the ground(s) of burden is found persuasive.

The current requirement, in so far as it regards the invention restriction, is still deemed proper and is therefore made FINAL.

Claims 35-39 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected inventions, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 8/1/2006.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 7, 8, 28 and 30-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

There are insufficient antecedent bases for the following limitations:

Claim 7 recites the limitation "the first liquid medium" in lines 2-3 and claim 8 recites the limitation "the first liquid medium" in lines 2-3, also. For the purpose of examination, the interpretation "the first fluid medium" will be assumed.

Claim 28 recites the limitation "the incorporation steps" in lines 1-2. Examiner suggests that this claim depend from claim 27 instead of claim 26.

Claim 30 recites the limitation "another lateral extruder" in line 4. For the purpose of examination, the interpretation "a first lateral extruder" will be assumed.

Claim 31 recites the limitation "the product" in line 1 and claim 32 recites the limitation "the product" in line 1, also. For the purpose of examination, the interpretation "the elastomer mixture" will be assumed.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6-9, 17-19, 23, 32, 34, and 40-42 are rejected under 35 U.S.C. 102(b) as being anticipated by Sturm et al (WO 02/30652). Please note that the

citations in the following discussion are referenced to the English translation version, U.S. Patent Application Publication 2004/0094862.

Sturm et al, hereafter "Sturm", discloses a method of manufacturing an elastomer mixture in an extruder, as recited in claim 1. Sturm teaches metering elastomer and softener (fluid medium) into a multi-shaft (mixing) extruder for the purpose of masticating/plasticizing. This is shown in paragraphs [0025], [0033] and [0034]. Uniform distribution will result from the use of powdered rubber, cited in paragraph [0061].

Sturm teaches an emulsion for the elastomer, as required by claims 2 and 3. See paragraph [0012]. An emulsion would imply a solution present in an immiscible liquid.

Sturm teaches the use of a ring extruder as a tightly combining multiple-shaft (meshing multi-screw) extruder rotating in the same direction, as required by claim 6. See paragraph [0044].

Sturm teaches that additives, and specifically carbon black, are premixed with elastomer parent material, as required by claim 7. See paragraph [0061].

Sturm teaches that additives and softener can be metered into the feed zone of the extruder, as required by claim 8. See paragraph [0056].

Sturm teaches that filler (reinforcing material) in a suspension is added to the elastomer, as required by claims 9 and 42. See paragraph [0012].

Sturm teaches that the mixture is transformed to a cohesive mixture (compound), as required by claim 40. See paragraph [0033].

Art Unit: 1732

Sturm teaches that the filler (reinforcing material) is carbon black (soot) or silicate, as required by claim 41. See paragraph [0027].

Sturm teaches that molding aids are added to the elastomer, as required by claims 17 and 18. See paragraph [0028].

Sturm teaches that filler is added to the elastomer, as required by claim 19. See paragraph [0027].

Sturm teaches that degasification takes place in the extruder, as required by claim 23. See paragraph [0058].

Sturm teaches that the elastomer mixture can be molded into a shaped end product, as required by claim 32. See paragraph [0053].

Sturm teaches cross-linking in the extruder, as required by claim 34. See paragraph [0029].

Claims 1, 6-8, 17-19, 21-22, 33, and 40-41 are rejected under 35 U.S.C. 102(b) as being anticipated by Handa et al (U.S. Patent 5,158,725).

Handa et al, hereafter "Handa", discloses a method of manufacturing an elastomer mixture in an extruder, as recited in claim 1. Handa teaches feeding an elastomer and oil (fluid medium) into a mixing extruder in a controlled manner (uniform distribution) wherein ingredients are mixed to form a polymer mixture. This is shown at lines 15-36 in column 2.

Handa teaches a co-rotating (same direction) twin-screw (multi-screw) extruder, as required by claim 6, at lines 40-42 in column 2.

Art Unit: 1732

Handa teaches feeding at least one of filler and curative, in addition to other components, into the extruder, as required by claims 17, 18, and 19. The wording "at least" contemplates filler only. See lines 15-36 in column 2 and lines 62-66 in column 5.

Handa teaches operating below the cure (vulcanizing) temperature of the material, as required by claim 21. See lines 24-27 in column 3.

Handa teaches distributive and dispersive mixing, as required by claim 22, at lines 53-56 in column 3.

Handa teaches pelletizing the compounded elastomer, as required by claim 33, at lines 8-11 in column 6.

Handa teaches that polymer (elastomer), oil (fluid medium) and filler (reinforcing material) can be premixed or combined simultaneously in the feed inlet, as required by claims 7 and 8. See lines 62-66 in column 5 and 4-7 in column 6.

Handa teaches that the materials may be compounded to form a master batch (compound), as required by claim 40. See lines 62-64 in column 5.

Handa teaches that the filler (reinforcing material) is carbon black (soot), as required by claim 41. See lines 62-63 in column 5.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Handa as applied to claims 1, 6-8, 17-19, 21-22, 33, and 40-41 above, and further in view of Neubauer et al (U.S. Patent 6,200,509).

Handa teaches the method of claims 1, 6-8, 17-19, 21-22, 33, and 40-41, as discussed above.

Handa does not teach the elastomer present in a suspension, as required by claim 4.

Neubauer et al, hereafter "Neubauer", teaches a polymer (elastomer) obtained in a suspension process at lines 55-60 in column 4.

Handa and Neubauer are combinable because they are concerned with a similar technical field, namely, processing elastomeric materials in an extruder. One of ordinary skill in the art at the time of the invention would have found it obvious to include in the method of Handa the suspension configuration, as taught by Neubauer, and would have been motivated to do so to expand the range of materials available to the process.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Handa as applied to claims 1, 6-8, 17-19, 21-22, 33, and 40-41 above, and further in view of Hall et al (U.S. Patent 5,501,804).

Handa teaches the method of claims 1, 6-8, 17-19, 21-22, 33, and 40-41, as discussed above.

Handa does not teach the elastomer present as a gel-like compound, as required by claim 5.

Hall et al, hereafter "Hall", teaches an elastomer gel composition at lines 6-24 in column 1.

Handa and Hall are combinable because they are concerned with a similar technical field, namely, processing elastomeric materials. One of ordinary skill in the art at the time of the invention would have found it obvious to include in the method of Handa the gel configuration, as taught by Hall, and would have been motivated to do so to expand the range of materials available to the process.

Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Handa as applied to claims 1, 6-8, 17-19, 21-22, 33, and 40-41 above, and further in view of Takahaski et al (U.S. Patent 4,927,587).

Handa teaches the method of claims 1, 6-8, 17-19, 21-22, 33, and 40-41, as discussed above.

Handa does not teach the filler present as a suspension, as required by claim 9. Handa further does not teach the filler as a premix prepared by wet milling, as required by claim 10.

Takahaski teaches wet milled silica as a component to a silicone rubber composition for extrusion molding at lines 50-60 in column 3. The silica constitutes a filler (reinforcing material). The milling would have been a prior process. The milled silica would be in particulate form and, therefore, present as a suspension.

Handa and Takahaski are combinable because they are concerned with a similar technical field, namely, processing elastomeric materials in an extruder. One of ordinary skill in the art at the time of the invention would have found it obvious to include in the method of Handa the filler preparation, as taught by Güntherberg, and would have been motivated to do so to gain uniform dispersion of the filler.

Claims 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Handa in view of Takahaski as applied to claims 1, 6-10, 17-19, 21-22, 33, and 40-41 above, and further in view of Semmekrot (U.S. Patent 5,158,784).

Handa and Takahaski teach the method of claims 1, 6-10, 17-19, 21-22, 33, and 40-41, as discussed above.

Handa and Takahaski do not teach milling in a shearing field between two coaxial rotating elements, as required by claim 11, or wherein the rotating elements are cones with an expandable gap, as required by claim 12. Handa and Takahaski further do not teach that one of the rotating elements is a rotor and the other is a stator, as required by claim 13. Handa and Takahaski still further do not teach pin-like elevations in the gap, as required by claim 14.

Semmeckrot teaches a mixing (milling) device having a stator and a rotor in coaxial configuration at lines 8-15 in column 2. The rotor is identified by reference character 6 and the stator by reference character 4 in Fig's 1, 2, and 3. Fig. 3 shows a conical form to the rotor at the distal end and a complementary form to the stator. Fig. 3 also shows an expandable/reducible gap between the conical features which is

Art Unit: 1732

actuated by a piston rod at reference character 12. See lines 35-40 and 52-56 in column 3.

Semmekrot teaches a pin mixer where the pins are arranged in axial planes over the interior surface of a stator. This is shown at lines 43-57 in column 1.

Handa, Takahaski and Semmekrot are combinable because they are concerned with a similar technical field, namely, processing viscous materials in an extruder. One of ordinary skill in the art at the time of the invention would have found it obvious to include in the method of Handa and Takahaski the mixing technique, as taught by Semmekrot, and would have been motivated to do so for good distributive mixing action.

Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Handa in view of Takahaski and Semmekrot as applied to claims 1, 6-14, 17-19, 21-22, 33, and 40-41 above, and further in view of Gamblin (U.S. Patent 5,029,760).

Handa, Takahaski and Semmekrot teach the method of claims 1, 6-14, 17-19, 21-22, 33, and 40-41, as discussed above.

Handa, Takahaski and Semmekrot do not teach collision elements interacting with a surface, as required by claim 15, and do not teach a centrifugal mill, as required by claim 16.

Gamblin teaches a ball (collision elements) mill at lines 35-50 in column 1. Gamblin further teaches a centrifugal mill at lines 20-25 in column 3.

Art Unit: 1732

Handa, Takahaski, Semmekrot and Gamblin are combinable because they are concerned with a similar technical field, namely, processing powders. One of ordinary skill in the art at the time of the invention would have found it obvious to include in the method of Handa, Takahaski and Semmekrot the grinding technique, as taught by Gamblin, and would have been motivated to do so to optimize grinding action.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Handa as applied to claims 1, 6-8, 17-19, 21-22, 33, and 40-41 above, and further in view of Bohm et al (U.S. Patent Application Publication 2003/0111770).

Handa teaches the method of claims 1, 6-8, 17-19, 21-22, 33, and 40-41, as discussed above.

Handa does not teach absence of cross-linking agents, as required by claim 20.

Bohm et al, hereafter "Bohm", teaches preparation of an elastomer composition excluding any vulcanizing (cross-linking) agents. See paragraph [0059].

Handa and Bohm are combinable because they are concerned with a similar technical field, namely, processing elastomer compositions. One of ordinary skill in the art at the time of the invention would have found it obvious to include in the method of Handa the composition restriction, as taught by Bohm, and would have been motivated to do so to prevent premature vulcanization before completion of processing.

Claims 9 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Handa as applied to claims 1, 6-8, 17-19, 21-22, 33, and 40-41 above, and further in view of Andersen et al (U.S. Patent 5,151,026).

Handa teaches the method of claims 1, 6-8, 17-19, 21-22, 33, and 40-41, as discussed above.

Handa does not teach the filler present as a suspension, as required by claim 9. Handa further does not teach dewatering in the extruder, as required by claim 24. Handa still further does not teach dewatering before charging a vulcanizing agent, as required by claim 25.

Andersen et al, hereafter "Andersen", teaches a method of removing liquid from non-liquid material in an extruder, the non-liquid material including elastomers and other particulate or comminuted substances such as wood or cone pulp (reinforcing material). This is shown at lines 4-14 in column 3. The particulate or comminuted substances would be present as a suspension. The dewatering technique is detailed at lines 50-65 in column 3.

Andersen teaches that water removal is necessary because the water absorbs the heat generated by the work processes in the extruder making them less efficient. This is shown at lines 65-68 in column 1 and 1-5 in column 2. Given the heat-sink effect of water, it would have been obvious to one of ordinary skill to control an exothermic reaction like vulcanizing by removing the water beforehand.

Handa and Andersen are combinable because they are concerned with a similar technical field, namely, processing elastomeric materials in an extruder. One of

Art Unit: 1732

ordinary skill in the art at the time of the invention would have found it obvious to include in the method of Handa the dewatering step, as taught by Andersen, and would have been motivated to do so to render the product in dry form for convenient processing.

Claims 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Handa in view of Andersen as applied to claims 1, 6-9, 17-19, 21-22, 24-25, 33, and 40-41 above, and further in view of Güntherberg et al (U.S. Patent 5,817,266).

Handa and Andersen teach the method of claims 1, 6-9, 17-19, 21-22, 24-25, 33, and 40-41, as discussed above.

In addition, Handa teaches that materials can be fed into the extruder at one or more locations, as required by claim 27, at lines 35-40 in column 4.

Further in addition, Andersen teaches a second extruder transverse to the first extruder functioning as a "drag flow force" which effectively compresses the material while dewatering, as required by claim 30.

Handa and Andersen do not teach several dewatering steps, as required by claim 26, or the alternation of charging and dewatering steps, as required by claim 28. Handa and Andersen further do not teach measured dewatering, as required by claim 29. Handa and Andersen still further do not teach reaction with a coagulant, as required by claim 31.

Güntherberg et al, hereafter "Güntherberg", teaches at least two dewatering orifices in the Abstract. Given multiple charging and dewatering sites, it would have been obvious as a matter of choice to one of ordinary skill to alternate functionalities.

Art Unit: 1732

Furthermore, the amount of water to be removed at each dewatering site, as a variable affecting the downstream processability of the material mixture moving through the extruder, would have been obvious.

Güntherberg teaches a rubber preparation which is coagulated by addition of an electrolyte at lines 13-16 in column 1.

Handa, Andersen and Güntherberg are combinable because they are concerned with a similar technical field, namely, processing elastomeric materials in an extruder. One of ordinary skill in the art at the time of the invention would have found it obvious to include in the method of Handa and Andersen the sequential dewatering steps, as taught by Güntherberg, and would have been motivated to do so to smooth the processing.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following documents are cited to further show the state of the art with regard to elastomer processing:

U.S. Patent Application Publication 2002/0126569 to Silvi et al

U.S. Patent 5,374,387 to Barnes et al

U.S. Patent 6,548,574 to Mathur et al

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence Lambelet whose telephone number is 571-272-1713. The examiner can normally be reached on 8 am-4:30 pm.


Application/Control Number: 10/798,350
Art Unit: 1732

Page 15

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571-272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LEL
9/6/2006


CHRISTINA JOHNSON
PRIMARY EXAMINER
9/11/06